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11/051,688	02/04/2005	Donley Byron Hoffman	200403576-1	4142

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EXAMINER
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ART UNIT	PAPER NUMBER
2628	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	11/051,688	HOFFMAN ET AL.
	Examiner	**Art Unit**
	Daniel F. Hajnik	2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>07 February 2007</u>.

2a) ☒ This action is **FINAL**.　　　　2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-19</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-19</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>04 February 2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　　1. ☐ Certified copies of the priority documents have been received.

　　　　2. ☐ Certified copies of the priority documents have been received in Application No. _____.

　　　　3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1.   The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees.   A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2.   Claims 1-3, 5-8, 10-14, and 19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2, 4-11, 13-18, and 20 of copending Application No. 11/048192 in view of Stoll et al. (NPL Document "Lightning-2: A High-Performance Display Subsystem for PC Clusters", herein referred to as "Stoll"). Although the conflicting claims are not identical, they are not patentably distinct from each other because:

As per independent claims 1, 8, 14, and 19 of current application, these claims disclose the same limitations as disclosed in independent claims 1, 10, 16, 20 of copending application 11/048192, with the exception of a few limitations. In particular the independent claim 1 of this application and independent claim 1 of copending application 11/048192 include:

Application 11/051688	Application 11/048192

A system for rendering three-dimensional graphics	A system for rendering three-dimensional graphics
a host capable of executing an application program that calls for the rendering of at least three-dimensional graphics in an application window	a host capable of executing an application program that calls for the rendering of at least three-dimensional in an application window
logic associated with the host for apportioning content defining a three-dimensional graphics window to be rendered	logic associated with the host for generating a plurality of graphics windows, wherein the graphics windows comprise at least one three-dimensional graphics window and at least one two-dimensional graphics window
a plurality of render nodes configured to collectively render the three dimensional graphics window in response to the content supplied by the host	a plurality of render nodes configured to collectively render a three-dimensional graphics image in response to graphics input supplied by the host
logic associated with at least one of the plurality of render nodes for configuring the at least one render node to be capable of rendering only a portion of the three-dimensional graphics window based on apportioned content that the at least one render node receives from the host without content comprising a portion of the three-dimensional graphics window to at least one other of the plurality of render nodes	logic associated with the host for communicating to the plurality of render nodes information associated with only at least one three-dimensional graphics window

One difference is that independent claims (i.e. claim 1) of copending application 11/048192

differ from the respective independent claims of this application in that the copending

application further includes a "two-dimensional window". However, given the capabilities to

create a three-dimensional window, it would have been obvious to one of ordinary skill in the art

to also have the capability to generate a two-dimensional window because this window is a simpler graphical object to create. One advantage to generating two-dimensional windows in addition to three-dimensional windows is greater flexibility in GUI display options where a user may prefer a 2D window for a given program.

An additional difference is that this application further includes logic for apportioning the graphics content among the plurality of render nodes. Copending application 11/048192 does not teach or suggest this limitation. However, Stoll teaches this limitation by teaching of *"The images at the left are the contributions of two rendering nodes out of four to the output image on the right"* (caption under figure 4) where these rendering nodes do not render the full image on the right but only the apportioned content required by these particular rendering nodes. Stoll further teaches the claimed limitation by teaching of *"Each node then renders its portion of the scene to its local framebuffer and draws the strip headers that will route its pixels to the appropriate places on the output displays"* (5th paragraph under section 3.3.2). It would have been obvious to one of ordinary skill in the art to combine Copending application 11/048192 and Stoll. Stoll teaches one advantage of the combination by teaching of using graphics accelerators (associated with render nodes) from many different systems to combine to render a common image (1st full paragraph in 2nd col on page 141).

As per claims 2, 3, 5, 6, and 7, these claims disclose similar limitations to claims 2, 4, 5, 6, and 7 of copending application 11/048192, respectively.

As per claims 10, 11, 12, and 13, these claims disclose similar limitations to claims 10, 13, 14, and 15 of copending application 11/048192, respectively.

This is a provisional obviousness-type double patenting rejection because the conflicting

claims have not in fact been patented.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1, 2, 8, 10, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by

Stoll et al. (NPL Document "Lightning-2: A High-Performance Display Subsystem for PC

Clusters", herein referred to as "Stoll").

As per claim 1, Stoll teaches the claimed host and the claimed rendering program by

teaching of *"graphics applications"* (2nd sentence in abstract) and by teaching of *"host system*

independence" (3rd paragraph under section 1). Stoll teaches the claimed three-dimensional

graphics window in figure 4 (right image) and by teaching of *"Priority-based window layering*

allows overlapping window drawn on different rendering nodes to correctly occlude each other,

independent of the order of the nodes in the composition change" (2nd paragraph under section

4.1). In this instance, a three-dimensional window would be one such window where a three-

dimensional image such as the one shown in figure 4 (right image) is displayed. In addition,

Stoll also teaches of three-dimensional rendering capabilities in a window by teaching of *"Our*

goal in the design of Lightning-2 is to enable the display of high-performance 3D graphics from

clusters of PCs" (1st paragraph under section 1).

Stoll teaches the claimed host for apportioning content defining a three-dimensional graphics to be rendered by teaching of in figure 4, apportioning certain blocks (as seen on left side) to be rendered.

Stoll teaches of render nodes in figure 4, where the apportioned blocks are "Input From Rendering Nodes" which collective render the blocks on the left as shown to produce the collective image on the right (Labeled "Output Display Space").

Stoll teaches the claimed logic for having at least one rendering node capable of rendering only a certain portion of the apportioned content by teaching of "*The images at the left are the contributions of two rendering nodes out of four to the output image on the right*" (caption under figure 4) where these rendering nodes do not render the full image on the right but only the apportioned content required by these particular rendering nodes. Stoll further teaches the claimed limitation by teaching of "*Each node then renders its portion of the scene to its local framebuffer and draws the strip headers that will route its pixels to the appropriate places on the output displays*" (5th paragraph under section 3.3.2).

As per claim 2, Stoll teaches the claimed compositor in section 4, titled "Image Composition" and by teaching of "*A number of image-compositing functions*" (abstract).

As per claims 8 and 10, these claims are similar in scope to claims 1, and 2 respectively, and thus are rejected under the same rationale.

As per claim 19, this claim is similar in scope to claim 1, and thus is rejected under the same rationale.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 3-6, 9, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoll in view of Walls et al. (US Patent 6,084,553, herein referred to as "Walls").

As per claim 3, Stoll does not teach the claimed logic for detecting a configuration change in the windows. Walls teaches the claimed limitation by teaching of *"when a client issues a protocol request to an Sls Screen 402, the SLS Layer 204 propagates it to each of the Alternative Screens' 404-410 DDX Layers 206a-206n. A window never actually moves off or on to an Sls Screen 402, but rather moves off of or on to an Alternate Screen 404-410"* (col 6, line 66 – col 7, line 4). Here, the system can perform the client protocol request because the system can detect a configuration change of the windows.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Stoll with Walls. Stoll and Walls are analogous art. Further, Walls teaches one advantage of the combination by teaching of using a single logical screen to efficiently manage multiple monitors by detecting changes. This would be desirable to Stoll because the system of Stoll is designed to use multiple monitors (1st full paragraph in 2nd col on page 141). The system

of Walls can offer better data management through carefully detecting changes of the windows

with a multiple monitor system such as the one of Stoll.

As per claim 4, Stoll does not explicitly teach the claimed limitation. Walls teaches the

claimed limitation in figure 10 where parts of windows A and B can be rendered in a portion (i.e.

portion X1) without the state information relevant for the other portions (i.e. X0, X2, and X3)

(also see col 21, lines 40-48). It would have been obvious to one of ordinary skill in the art to

use the claimed feature with Stoll in order to speed up rendering for a given portion.

As per claim 5, Stoll does not teach the claimed limitations. Walls teaches the claimed

limitation by teaching of moving and resizing windows across the monitors (col 6, lines 57-60).

It would have been obvious to one of ordinary skill in the art to use the claimed feature with Stoll

in order to offer common window control features to the GUI system of Stoll and improves its

interface for the user.

As per claim 6, Stoll does not teach the claimed limitations. Walls teaches the claimed

limitation by teaching of *"when a client issues a protocol request to an Sls Screen 402, the SLS*

Layer 204 propagates it to each of the Alternative Screens' 404-410 DDX Layers 206a-206n. A

window never actually moves off or on to an Sls Screen 402, but rather moves off of or on to an

Alternate Screen 404-410" (col 6, line 66 – col 7, line 4). In this instance, if the user moves the

whole window within one screen (one portion) (i.e. 404) and that window is the only window on

that screen, then Walls would not need to re-communicate the content information in response to

a detecting of a configuration change. This is because the window does not leave that portion thus would not need to be re-communicated to another portion (screens 404-410). It would have been obvious to one of ordinary skill in the art to use the claimed feature with Stoll in order to avoid unnecessary content exchange between the screen and the memory which could slow down the system.

As per claims 9, 11 and 12, these claims are similar in scope to claims 4, 3, and 6, respectively, and thus are rejected under the same rationale.

7.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stoll in view of Walls in further view of Ikeda et al. (US Pub 2004/0174385, herein referred to as "Ikeda").

As per claim 7, Stoll does not teach the claimed limitations. Ikeda teaches the claimed limitation by teaching of "*combine the fixed color data with updated image data, and write only the updated portion over a previously combined image, so that it is not necessary to read unupdated image data*" (paragraph [0039]).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Stoll, Walls, and Ikeda. Ikeda teaches one advantage of the combination by teaching of "it is thus possible to minimize the occupation of busses and combine images at high performance and low power consumption" (paragraph [0039]).

8.   Claims 13-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoll in view of Ikeda.

As per claim 13, Stoll does not teach the claimed limitations. Ikeda teaches the claimed limitation by teaching of *"combine the fixed color data with updated image data, and write only the updated portion over a previously combined image, so that it is not necessary to read unupdated image data"* (paragraph [0039]). In this instance, only the changed portion of the image requires updating. When combined with the system of rendering nodes of Stoll all the claimed limitations can be achieved.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Stoll and Ikeda. Ikeda teaches one advantage of the combination by teaching of "it is thus possible to minimize the occupation of busses and combine images at high performance and low power consumption" (paragraph [0039]).

As per claim 14, this claim is similar in scope to claims 8, 10, and 13, and thus is rejected under the same rationale. This is because the limitations contained within this claim are also included in claims 8, 10, and 13. Further, Stoll teaches the claimed "re-rendering" by teaching of in figure 5 of a cycle of the rendering process for a given rendering node (picture on left) where rendering can be performance many times.

As per claim 15, Stoll does not teach the claimed limitations. Ikeda teaches the claimed limitation by teaching of *"combine the fixed color data with updated image data, and write only the updated portion over a previously combined image, so that it is not necessary to read unupdated image data"* (paragraph [0039]) where in figure 5, the graphics content information

can be in figure 5, "Image Data #1" – "Second Frame" and where the rendered portion can be the "Combined Image Update Data" – "Second Frame". In this instance, the update can be a greater portion of graphics updating than a previous frame. This situation can occur when the user moves an overlapping portion off of "Image Data #1" – "Second Frame" such that the updating operation then requires a larger portion to be re-rendered during the update to create the "Combined Image Update Data" – "Second Frame".

It would have been obvious to one of ordinary skill in the art to use the claimed feature with Stoll. The motivation of claim 13 is incorporated herein.

As per claims 16 and 18, these claims are both similar in scope to claim 6 and thus are rejected under the same rationale because these claims have limitations similar to those within claim 6.

9.   Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stoll in view of Ikeda in further view of Alcorn (NPL Document "sv7: Blazing Visualization on a Commodity Cluster", herein referred to as "Alcorn").

As per claim 17, Stoll teaches the claimed "graphic windows regarding the movement of a portion of the graphics window from one render node to another render node" by teaching of *"overlapping windows drawn on different rendering nodes to correctly occlude each other"* ([2nd] paragraph under section 4.2) and by teaching of *"dynamic GUI elements"* ([3rd] paragraph under section 4.2) where dynamic elements can includes windows moving.

Stoll does not teach the claimed "render nodes to communicate directly to other render nodes". Alcorn teaches the claimed limitation on page 16 where the figure shows two "Rendering Nodes" directly connected to each other for communication.

. It would have been obvious to one of ordinary skill in the art at the time of invention to combine Stoll, Ikeda, and Alcorn. The references of Stoll and Alcorn are analogous art. Further, one advantage to directly communicating between rendering nodes is for faster communication by avoiding having to communicate with an intermediate host or unnecessary intervening render nodes. This also can result in faster updates on the screen.

Response to Arguments

Applicant's arguments filed 2/7/2007 have been fully considered but they are not persuasive. Applicant argues the double patenting rejection is improper (pages 9-10 in filed response). The examiner respectfully maintains that the rejections are proper because, while the two inventions are not exactly identical, the differences are obvious ones. Given one of the claimed inventions, it would have been obvious to one of ordinary skill in the art to arrive at the second. For example, in the last element of each claim, logic is used to collectively render image data and the logic is used to communicate the host to the plurality of rendering nodes in each case. In each case, the logic performs a similar concept and has a similar function.

Applicant argues Stoll does not teach the claimed invention because the entire frame of image data is used by each rendering node in Stoll and argues that the claimed invention requires that

only a portion of the rendering data is used by each rendering node (pages 10-13 in filed response).

The examiner respectfully maintains that the rejections are proper because specifically the claimed limitation which relates to this arguments states "logic associated ... for configuring the at least one render node to be capable of rendering only a portion ... and without content comprising a portion ... apportioned to at least one other of the plurality of render nodes". Figure 3 of Stoll shows where background color pixels 8-15 (from the image frame) are inputted into an input unit 0 (a rendering node), where only a portion of these background pixels is rendered. In this instance, the portion rendered is "local contribution for display 0" (towards the left side in the rendering node). Thus, the rendering node is capable of rendering this data on the left side without the entire frame of data. After this "local contribution for display 0" is rendered, it is composited into the entire frame within the rendering node. Thus, the rendering node is capable of rendering this local portion without other portioned content. In theory, if the entire frame was inputted and the entire frame was directly rendered in the rendering node then there would be no need for a compositor because the compositor is used to combine the separately rendered portion to the rest of the image frame. However, Figure 3 shows a compositor inside of each of the 3 rendering nodes shown. This compositor shows that a combining process must join the separately rendered portion to the rest of the background pixels. It appears in the context of applicant's arguments that the applicant intends to claim an invention where only the required portion of image content is transmitted and rendered in the rendering node and that the node itself contains no other image frame data at all. Or in other words, the rendering node never even comes in contact with other image data intended to be rendering in

another portion. However, the claim language right now does not require this. The claim

language requires that at least one rendering node is capable of rendering a given portion of

image data without content from other portions of image data which is a more broad description

than argued by applicants. Thus, the examiner, respectfully, maintains that the prior art

rejections are proper.

Applicant further argues the office action over-generalizes some of the claimed features as "re-

rendering" (pages 14-15 in filed response). Applicant further argues Stoll does not teach the

claimed logic for identifying a reconfiguration operation to implicated render nodes and that the

logic for re-rendering is based on the communication reconfiguration information (pages 14-15

in filed response).

The examiner respectfully maintains that the rejections are proper because Stoll teaches the

claimed re-rendering concept by teaching of in figure 5 of a cycle of the rendering process for a

given rendering node (picture on left) where rendering can be repeated. Further, the claimed

concept in claim 14 uses implicated render nodes to re-render or update a portion of the three-

dimensional graphics window. This is a similar concept to the claimed aspect of claim 13, where

the rejection relies upon Ikeda for teaching *"combine the fixed color data with updated image*

data, and write only the updated portion over a previously combined image, so that it is not

necessary to read unupdated image data" (paragraph [0039]). If this update image data concept

is applied to the combination of references where Stoll has render nodes and re-rendering

capabilities all the claimed limitations are taught. This is because Stoll can re-render portions of

the image where Ikeda states that only certain portions need to be updated and where the

unchanged portions do not need to be re-rendered. Thus, in this office action, the reasons and

rationale for the rejection of claim 13 is incorporated into claim 14 in order to bring in this

concept of only updating required portions of the image data.

Conclusion

10.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Daniel F. Hajnik whose telephone number is (571) 272-7642.

The examiner can normally be reached on Mon-Fri (8:30A-5:00P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ulka J. Chauhan can be reached on (571) 272-7782. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DFH

ULKA J. CHAUHAN
PRIMARY EXAMINER